

### **REMARKS**

Claims 1-13 are pending in the present application. Applicant proposes amending the claims as indicated above. Support for the proposed amendment may be found between lines 12-22 on page 10 of the Patent Application. No new matter has been added. Applicant has submitted a Request for Continued Examination with the present response and therefore requests that the proposed amendments be entered and considered by the Examiner.

In the Office Action, claims 1-13 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Harrison (U.S. Patent No. 6,154,485) in view of Forsen (U.S. Patent No. 6,173,014). The Examiner's rejections are respectfully traversed.

Claim 1 sets forth a method of transmitting signals from at least two first antennae to at least one second antenna. The claimed method includes determining at least one first coefficient based upon information indicative of at least two first signals received by the at least two first antennae. The first coefficient is indicative of at least one correlation between the first signals received by the antennae and the first signals are transmitted from the second antenna(e). The claimed method also includes determining at least one second coefficient based on the first coefficient. The second coefficient indicates weights applied to at least two second signals to be transmitted by the two or more antennae. The weights indicate relative amounts of orthogonal coding and beamforming to be used for transmitting the second signals. Figure 1 depicts one exemplary embodiment of a system 8 that may implement the claimed method. The system 8 includes two transmit antennae 24, 26. A space-time encoder 12 may be used to compute correlation coefficients that can be used to control relative amounts of beamforming and orthogonal coding. See Patent Application, page 6, line 18 – page 12, line 14 and Figures 1-2.

A finding of obviousness under 35 U.S.C. § 103 requires a determination of the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed subject matter and the prior art, and whether the differences are such that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. *Graham v. John Deere Co.*, 148 USPQ 459 (U.S. S.Ct. 1966). To determine whether the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made, one should determine whether the prior art reference (or references when combined) teach or suggest all the claim limitations. Furthermore, it is necessary for the Examiner to identify the reason why a person of ordinary skill in the art would have combined the prior art references in the manner set forth in the claims. The required reason may be provided by some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Thus, the absence of a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings may be evidence that the claims are not obvious.

Harrison is concerned with receiving signals using combined orthogonal transmit diversity and adaptive array techniques. Harrison describes a coefficient  $\alpha$  that may be used to calculate adaptive array filter weights 90 and 92, which may be used by an adaptive array processor 76 to allow a base transmitter to transition between an orthogonal transmit diversity mode and an adaptive array mode in proportion to degradation in the quality of feedback data. This transition may allow the base transmitter to disable the adaptive array mode in proportion to the degradation of the quality of feedback data from a receiver. See Harrison, col. 8, ll. 23-35.

Forssen describes estimating the correlation of impairments associated with the signals received at different antennas. The impairment of a signal is defined as the combination of the interference plus the noise in a signal received at an antenna. The impairment of signals provided by a single source that travel along different paths and are received at two closely spaced antennas should be correlated, so estimates of the impairment correlation may permit the interference and the noise in a signal to be estimated and removed. See Forssen, col. 4, ll. 37-56. For example, a branch metric processor 550 may use estimates of the impairment correlation properties to improve branch metric formulations. See Forssen, col. 7, ll. 12-25.

However, neither of these references is concerned with using correlations between signals transmitted by a first set of antennas to determine the relative amounts of orthogonal coding and beamforming used to transmit signals from a different set of antennas to the first set of antennas. In particular, the cited references don't describe using correlations between pilot signals to determine the relative amounts of orthogonal coding and beamforming. Applicant respectfully submits that the cited references fail to teach or suggest determining at least one first coefficient that is indicative of at least one correlation between the first signals transmitted by a second antenna and received by first antennae, as set forth in independent claim 1. Applicant also respectfully submits that the cited references fail to teach or suggest determining at least one second coefficient (which determines relative amounts of orthogonal coding and beamforming to be used for transmitting second signals from the antennae) based on the first coefficient, as set forth in independent claim 1. Applicant also submits that the cited references fail to teach or suggest determining the correlation coefficients based on at least one pilot signal transmitted by said at least one second antenna, as set forth in claims 2-3 and 5.

Applicant therefore respectfully submits that the prior art of record fails to teach or suggest all the limitations set forth in the pending claims. Furthermore, both of the cited references are completely silent with regard to determining relative amounts of orthogonal coding and beamforming based on correlations between signals received by the antennae from a different set of antennas. Applicant therefore submits that the prior art of record contains no reason that a person of ordinary skill in the art would modify the subject matter described in the cited references to arrive at the claimed invention.

For at least the aforementioned reasons, Applicants respectfully submit that the pending claims are not obvious over the cited references and requests that the Examiner's rejections of claims 1-13 under 35 U.S.C. § 103(a) be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

/Mark W. Sincell/

Mark W. Sincell, Ph.D.

Reg. No. 52,226

Williams Morgan & Amerson, P.C.

10333 Richmond Avenue, Suite 1100

Houston, TX 77042

(713) 934-7000

(713) 934-7011 (Fax)

AGENT FOR APPLICANTS

Date: February 18, 2008